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Implementation of telenursing in the Slovak Republic

Wdrożenie telepielęgniarstwa na Słowacji

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STRESZCZENIE

WDROŻENIE TELEPIELĘGNIARSTWA NA SŁOWACJI

Cel pracy. Celem pracy było pokazanie na przykładzie dobrej praktyki możliwości zastosowania telepielęgniarstwa w pielęgniarskich dziedzinach neonatologii i pediatrii. Celem pracy jest temat wdrożenia telepielęgniarstwa w pielęgniarskich dziedzinach neonatologii i pediatrii. To nowe podejście do pielęgniarstwa zostało wdrożone poprzez stworzenie strony internetowej www.telesestra.sk. Poradnictwo i edukacja skoncentrowana na opiece nad noworodkami i niemowlętami była prowadzona za pośrednictwem poradni internetowej przez okres sześciu miesięcy.

Materiał i metoda. Aby osiągnąć ten cel, wybrano metodę, tj. analizę treściową merytoryczną i ilościową tekstu/dokumentu, w szczególności analizę merytoryczną i ilościową dokumentu elektronicznego - serwisu internetowego, którego centralnym elementem były poradnictwo online oraz artykuły fachowe o treści edukacyjnej. Były one przeznaczone przede wszystkim dla matek z dziećmi.

Wyniki. 2914 odwiedzających wyraziło zainteresowanie stroną internetową. W poradni internetowej zarejestrowano 36 pytań, których tematem była głównie kwestia karmienia piersią oraz opieki nad noworodkiem i niemowlęciem.

Wnioski. Na przykładzie dobrej praktyki w efekcie proponujemy wspieranie rozwoju telepielęgniarstwa także w innych dziedzinach, skupienie się na edukacji i szkoleniu pielęgniarek w zakresie technologii informacyjno-komunikacyjnych oraz wymianę doświadczeń zawodowych z pielęgniarkami z krajów, w których jest telepielęgniarstwo już trwale i mocno ugruntowane.

Słowa kluczowe: **telepielęgniarstwo, technologie informacyjne i komunikacyjne, pielęgniarka**

ABSTRACT

IMPLEMENTATION OF TELENURSING IN THE SLOVAK REPUBLIC

Aim. The aim of this study was to show on the example of good practice the possibilities of implementing telenursing in the nursing fields of neonatology and pediatrics. The new nursing approach was implemented by creating a website www.telesestra.sk. Such online counseling, consultancy and education, which was focused on the care for newborns and infants, were provided for six months.

Material and method. A method called content and quantitative analysis of text/document was chosen to fulfill the goal. In our case, the content and quantitative analysis was realized on the electronic document – a website, whose central part was comprised of the online counseling and professional articles with educational content primarily intended for mothers with children.

Results. The number of 2914 visitors showed interest in the website. As many as 36 questions were registered, which mainly focused on the issues with breastfeeding and care for newborns and infants.

Conclusions. Based on the example of good practice, the development of telenursing can also be supported in other fields, as well as drawing attention to education and training of nurses in the field of information and communication technologies and exchanging work experience with nurses from those countries, where telenursing is already an integral part of the health care system.

Key words: **telenursing, information and communication technologies, nurse**

INTRODUCTION

Possibilities to implement telenursing are extensive, considering the current progress in technologies, the rising costs of health care worldwide and the aging of population. Nowadays, we are observing significant differences in the level of development of telenursing abroad and in the countries of the former socialist regime. The United States, Brazil, Sweden and the United Kingdom belong to countries with the longest history of telenursing. In the V4 countries, telenursing is not still developed and researched much. Currently implemented technologies in Poland include mainly data analysis, telemedical and teleconsulting services and the development of services to protect the population's health.

In the Slovak Republic patient care is predominantly provided by a traditional nursing approach – direct contact between the nurse and the patient. We can see the benefit of telenursing in the home nursing care, also due to the growth of the aging population (developed countries are now focusing their health policy on this area). Poledníková et al. [1] are pioneers in the field of Slovak telenursing. They launched a website www.teleošetrovateľstvo.sk, which was administered by a team of health professionals. Its content was aimed to "treat" patients at home, focusing on education and counseling (care of the elderly, surgical patient, mentally ill and dying patient). In the Slovak Republic, telenursing could be developed mainly in the areas of primary prevention, education and counseling. These countries (Slovakia, Poland, Czech Republic, Hungary) also begin to carry out research studies concerned with the use of telenursing in practice. Authors Glinkowski, Pawłowska, Kozłowska [2] present a finding in their study pointing out the skills of nursing students in the field of information and communication technologies. Progress in the university education has an impact on positive attitudes towards telenursing and could thus become a milestone in the development of electronic health care system in Poland. In the Slovak Republic, there are results known from research studies by Poledníková et al. [3], Bachratá and Kristová [4], who examined the use of telenursing in Slovakia in order to identify the shortcomings and problematic areas during its practical application.

AIM

The main aim of this study (example of good practice) was to create a website with educational content (primarily intended for mothers with newborns and infants, secondarily for family members and the general public), and to launch an online counseling on the nursing care for mothers, newborns and infants. As an example of good practice, we analyzed the real usability of the website in providing telenursing services in the selected nursing specialty.

METHODS

We chose method called content and quantitative analysis of text/document, more specifically the content and quantitative analysis of electronic document – a website www.telesestra.sk, whose central part consisted of the online counseling and professional articles with educational content primarily intended for mothers with children.

The following quantification procedures were used:

- monitoring the frequency of occurrence of the analytical categories using absolute values,
- analysis of intensity – order or degree, traffic intensity of the online counseling and website [5].

Quantification methods were recorded in the time period from November 1st, 2018 until April 30th, 2019.

Units of the content and quantitative analysis of the website consisted of:

- professional articles with educational content primarily intended for mothers with children,
- online counseling.

Text document of an official nature

We chose the flow type of text document [6] to map the data, as the website was a result of creative activity, and then we tracked its real usability when providing telenursing services.

Pre-final stage

The final title of the website was preceded by a discussion, which resulted in a simple title – telesestra, composed of two words – "tele" and "sestra" (nurse). We assumed that even if the website visitors did not understand the word "tele", they would be able to interpret the word "sestra" (nurse) and the combination of these two words could evoke a certain natural curiosity. With the short name of the website, we also wanted to make it easier to remember. The creation, administration, update of the website as well as graphic work were time-consuming, including the fact that knowledge of the website environment was also necessary. That is why we cooperated with a software engineer for the whole time to ensure that the website worked properly and delivered expected results. The final launch of the website was preceded by test days in October 2018, when we noticed a problem with slow loading of the website. As this could have discouraged the visitors, we changed the hosting of the website and it speeded up the loading. The website was ready to become available for the public without major problems. We approached organizations providing care and services primarily intended for pregnant women and mothers with children and asked them to participate. From December 2018 to February 2019, 7 medical facilities, 3 maternity and 1 children's center in the Slovak Republic were contacted with a request to distribute leaflets containing a link to the website www.telesestra.sk. Determining criteria for selection were as follows: medical facilities providing care for children (neonatal and children's wards or clinics), medical facilities providing gynecological and obstetric care for women (gynecological and obstetric wards or clinics), maternity centers and children's centers. As

many as 400 information leaflets were distributed in total. The contact for website was also shared on social networks (Facebook, Instagram) during the period November 2018 – April 2019.

RESULTS

Content analysis of the website

The goal of Telesestra project was clarified at the homepage, including the information for whom it is primarily intended. Our intention was to create a nice and aesthetically pleasing design, which would be able to attract and address the target group – mothers with children. The central element of the website and the whole project was a statue of a mother with a child. The homepage is shown in Picture 1.

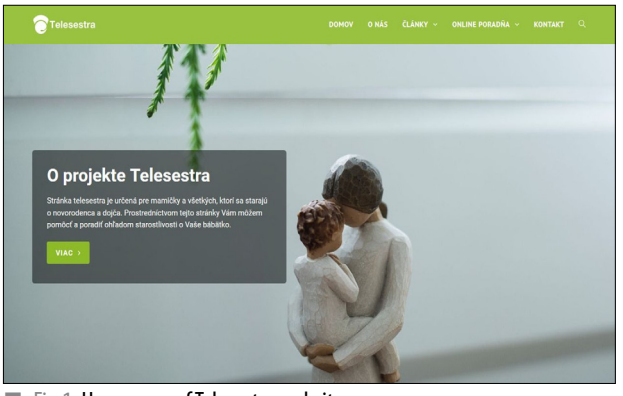


Fig 1. Homepage of Telesestra website

The header contained conceptual units of content (main parts) of the website: about us, articles, online counseling, contact. After clicking on the icon – about us, information about who is the website intended for was displayed as well as the advice and help through the online counseling was explained. The visitors could also read about the main idea of telenursing and the primary purpose of the website – providing counseling services and education in the field of care for newborns and infants.

The website had two key parts:

- professional articles with educational content primarily intended for mothers with children,
- online counseling.

Topics of articles were chosen according to the current issues and questions which resonate in both lay and professional public. Their content was focused on the characteristics of the neonatal period, baby colic, issue of alcohol during breastfeeding and the need for vitamin D in a child's diet. In the educational articles for mothers with children, we also dealt with the care of the baby teeth and rights of the hospitalized child. The articles were published based on studying the scientific literature. A picture as an eye-catcher was added to each article to arouse the interest of the target group. All pictures in the article section respected the copyrights and were downloaded from freely available websites (www.pixabay.com, www.unsplash.com, www.pexels.com). Respondents could either describe their problem in the online counseling or ask an anonymous question related to the care for a newborn or infant. They could also leave their e-mail address and receive an answer without having to check the website. Entering an e-mail address was not required. No other data on respondents were of interest to us. Questions were published without proofreading and in full. All questions and answers in the online counseling were visible and available in order to help other mothers with a similar problem. The question in the online counseling was answered within 24 hours at the latest. A picture on the topic was added to each question.

Quantitative analysis of the website

The quantitative analysis was carried out six months after the website was launched (from November 1st, 2018 to April 30th, 2019).

The following quantification procedures were used:

- monitoring the frequency of occurrence of the analytical categories using absolute values:
  - website traffic (number of visits, total views),
  - questions in the online counseling (number of questions, total views),
  - topics of educational articles (number of articles, total views).
- analysis of intensity – order or degree (website traffic intensity, intensity of the number of asked questions) [5].

The quantification of data is presented in Tables 1. to 3. Total views represent the number of displayed (viewed) pages at the web portal www.telesestra.sk per month (views of the particular template) and the website traffic was indicated by the total number of visitors (persons) per month (Tab. 1.).

Tab. 1. Indicators of views and visits of the website

Month	Total views (n)	Total visits (n)	Questions in online counseling (n)
November 2018	1005	252	4
December 2018	1500	300	3
January 2019	2 614	495	6
February 2019	1 631	482	6
March 2019	2 184	**684**	10
April 2019	2 201	**701**	7
Total	11 135	**2914**	36

The site was visited by 2914 visitors in six months. The highest number of visitors was recorded in April – 701 and March – 684 visitors. The website had an increasing trend of visits during the six-month period. As many as 36 questions were asked in the online counseling, most of them in March 2019 – 10 and April – 7 questions. We found out that the longer the site was accessible to the public, the more questions were asked in the online counseling. We summarized the number of questions for the given period, topics that the questions concerned and the

number of views for specific questions in the online counseling. The content of questions in the online counseling was categorized into five groups related to the care for newborns and infants.

Views in Tab. 2 indicated which topics the website visitors were most interested in.

Tab. 2. Questions in online counseling

Topic	Questions (n)	Views (n)
Breastfeeding	**14**	327
Infant nutrition	5	80
Newborn and infant hygiene	9	320
Care for sick child	5	115
Other	3	91
Total	**36**	933

A total of 36 questions were asked in the online counseling, most of them concerned the issue of breastfeeding – 14 questions and 327 views, followed by hygienic care – 9 questions and 320 views. When it comes to 5 questions with 80 views, they fell into the nutrition category and other 5 questions with 115 views were related to the care for a sick child. Category "Other" included 3 various questions with 91 views.

The number of 6 articles primarily intended for mothers with a newborn or infant were published in the educational part. Total views of the topics of articles are presented in Tab. 3.

Tab. 3. Topics of educational articles

Topic of article	Views (n)
Characteristics of the neonatal period	202
Alcohol during breastfeeding	245
Baby colic	**275**
Care of the baby teeth	263
Need for vitamin D in child's diet	188
Rights of hospitalized child	105
Total	**1278**

In the educational part of the website, respondents showed the greatest interest in the following topics – baby colic with 275 views, care of the baby teeth with 263 views and alcohol during breastfeeding with 245 views.

As emerged from the content and quantitative analysis of the electronic document, the usability of website www.telesestra.sk in providing telenursing services in the applied nursing specialties neonatology and pediatrics is real.

DISCUSSION

The application of information and communication technologies in nursing care is becoming more widespread, but only a few studies have been published in the field of newborn and infant care. Monitoring newborns in the first weeks of life is crucial to check proper nutrition, weight gain and to identify changes. As postpartum hospitalization has gradually shortened in recent years, parents/caregivers are more likely to fail to recognize conditions that require medical intervention, such as jaundice, dehydration, heart lesions and severe infections. Due to shorter hospital stays, there is also less time to educate and assist parents after the birth of their child. Isseta et al. [7] states that this problem may be worsened by inconsistent or poorly planned follow-up care after discharge from the hospital. Conventional monitoring after hospitalization could be improved in terms of cost and clinical effectiveness through telemedicine approach. Focusing on the main goal of our study, we implemented telenursing by creating a website Telesestra, through which we provided education and online counseling to mothers with newborns, infants and people caring for children of this age group. The dominant content of this website was the online counseling and educational part. Telesestra provided information on newborn and infant care, i.e. issues of breastfeeding, nutrition, nursing, hygiene and others. Educational materials were in the form of written text with pictures added. In the online counseling section, respondents contacted the nurse with their question or problem and received a response within 24 hours. Half a year after the website was launched, a quantitative analysis of the total website traffic was carried out. We found out that during these six months, 2941 people visited the website and the traffic rate was increasing. Respondents asked 36 questions in the online counseling. The effectiveness of telenursing in pediatric care was confirmed in the study by Isseta et al. [7] conducted in Barcelona. Authors evaluated the cost effectiveness of a new Internet system for monitoring newborns in comparison with the standard follow-up monitoring of newborns in the hospital. They paid special attention to the prevention of emergency room visits in the first month of the newborn's life. Authors also performed a retrospective cohort study on two low-risk groups of newborns. One group completed a standard follow-up visit in the hospital within 48 hours after discharge. The other group was monitored by the Internet monitoring system. Results of the study show that 18 (15.8%) out of 114 newborns who underwent the standard follow-up care in the hospital visited the emergency room in the first month of life, compared with 5 (5.6%; P=0.026) out of 90 children who were monitored by the Internet system. The cost of follow-up care in the hospital was 182.1 € per patient compared with 86.1 € for the online follow-up care. Monitoring of pediatric patients through the Internet has proved to be more effective and less costly than the standard monitoring in the hospital, especially when comparing the follow-up visits in the emergency room. Balenton and Chiappelli [8] from the USA also positively evaluate the application of telenursing and support healthy behavioral habits concerning perinatal care and breastfeeding issues through telenursing services, especially among the rural population and people with insufficient education. Nurses and lactation consultants educate first-time mothers, family members or other people involved about the benefits of breastfeeding and teach them proper lactation techniques.

Mothers receive audiovisual materials and have also other technologies at their disposal that lead them to replicate the best breastfeeding positions suitable for both mother and baby. Through telenursing, mothers and family members improve their health literacy, acquire necessary skills and become self-sufficient to ensure best practices in the care of newborns and infants. Research results from the online counseling show a significant sign that mothers and caregivers are interested in and need help with the care of newborns and infants, even after discharge from the medical facility. The role of qualified and educated nurses is to provide verified and professional information, as well as assistance based on the scientific evidence not only in hospitals, but also outside them, i.e. by using telenursing services. Implementation of telenursing in pediatric care in the Slovak Republic would be beneficial for mothers, people taking care of children, but also for the development of the nursing field.

Recommendations for nursing practice

Recommendations for nurses, teachers and scientific research staff:

- increase awareness of the professional and lay public about the possibilities to use information and communication technologies in nursing,
- further cooperate with medical facilities that would regularly recommend the website to the target group, e.g. when releasing mothers with a newborn from a hospital,
- promote the services provided and link to the website on Internet forums and portals for mothers with children,
- extend the offer of telenursing services (telephone consultation, video consultation),
- ask nurses for cooperation with the aim of expanding the composite of authors and services,
- provide telenursing services also in other applied nursing fields,
- cooperate with nurses from foreign countries, where telenursing is an integral part of the scientific field of nursing.

Recommendations for educational institutions:

- integrate telenursing into nurses' training,
- be mindful of nurses' training focused on the use of information and communication technologies in health care,
- form training programs aimed at developing technical skills of nurses,
- draw attention to the need for legislative changes to make telenursing and its services an integral part of nursing specialty,
- develop standards and determine competencies of tele-nurses in the Slovak Republic.

CONCLUSIONS

Our intention was to show on the example of good practice a new way of providing nursing care, to implement telenursing in the field of childcare and thus contribute to the development of nursing specialty in the Slovak Republic. Based on this study, we can state that the way of providing nursing care at a distance through a website using methods of education and counseling effectively complemented the traditional nursing care provided in direct contact. The implementation of telenursing into the conditions of nursing practice in the Slovak Republic will also depend on dominant factors – state health policy, health insurance companies, nurses and users (healthy population, patients).

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